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Models for Multi-Criteria Sustainability Assessment of a new more Biobased and Circular Economy

Tommy Dalgaard, Department of Agroecology, Aarhus University, Denmark

ABSTRACT

The aim of this study is to present new approaches to model potentials for an increased and more resource efficient biomass harvest in Denmark, and multi-criteria sustainability assessments of the socio-economic and environmental effects of different scenarios for such production.

Empirical results from a case study of large scale conversion to biorefinery technologies, aiming to increase the total Danish harvest of biomass by 10 million tonnes via the conversion to new types of crop production and land management, is used as an example, and a so called "Traffic-light" multi-criteria sustainability assessment scheme is introduced and exemplified. The aim is to contextualize how the problems in relation to the concrete scenario results can be considered, and used as input for a discussion of innovative models for future farming systems development, research and management.

Knowledge gaps for the Climate Action and Resource Efficiency Challenge in Horizon 2020 are discussed, and potentials for further research are identified based on experiences from the ongoing research project www.fremtidenslandbrug.dk, the recently initialized www.dNmark.dk strategic research alliance, and the BIO-VALUE Strategic Platform for Innovation and Research (SPIR) sustainability assessment workpackage.